REMARKS

Claims 1-48 are currently pending in the above-identified patent application. In the Office Action dated February 24, 2004, the Examiner objected to claim 33 because line 1 thereof presently depends from claim 8 rather than from claim 25. Applicants respectfully wish to point out that on page 8 of Amendment A filed on January 22, 2004, the dependency of claim 33 was amended to be from claim 32.

The rejection of claims 1-3, 8-15, 18, 21-22, 25-27, 32-39, 42, 45-46 under 35 U.S.C. 103(a) as being unpatentable over McEwen and Yair (U.S. Patent No. 5,965,054), in view of Kobayashi et al. (U.S. Patent No. 4,740,436) set forth in the Office Action dated October 22, 2003 was maintained, as was the rejection of claims 6, 7, 30 and 31 under 35 U.S.C. 103(a) as being unpatentable over McEwen and Yair, and further in view of Kobayashi et al. as applied to claims 1 and 25 above, and further in view of Koch et al. (U.S. Patent No. 5,827,602).

Claims 19, 20, 23, 24, 43, 44, 47, and 48 were newly rejected under 35 U.S.C. 103(a) as being unpatentable over McEwen and Yair (5,965,054) in view of Kobayashi et al. (4,740,436), since the Examiner stated that as to claims 19 and 43 Kobayashi et al. discloses that the conjugated polymer electrodes comprise porous conjugated polymer films having a conducting metal coating on the side thereof facing away from the ionic liquid (Col. 10, line 30 to Col. 11, line 46). The Examiner then concluded that because the electrodes of Kobayashi et al. are synthesized in the same manner as disclosed in the subject disclosure (i.e., electrochemically synthesized using the ionic liquid), it would have been obvious to one of ordinary skill in the art at the time the invention was made to have expected the Kobayashi et al. electrodes to be porous. Additionally, with regard to claims 20 and 44, the Examiner stated that Kobayashi et al. discloses that the conjugated polymer electrodes comprise conjugated polymer films electrochemically synthesized using the ionic liquid and having a conducting metal coating on the side thereof facing away from the ionic liquid (Col. 10, line 30 to Col. 11, line 46). The Examiner provided similar arguments for Claims 23 and 47, and for Claims 24 and 48.

Claims 4, 5, 16, 17, 28, 29, 40, and 41 were objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Applicants respectfully disagree with the Examiner concerning the above grounds for rejection, for the reasons to be set forth hereinbelow. Reexamination and reconsideration are respectfully requested.

Turning now to the rejection of claims 1-3, 8-15, 18, 21-22, 25-27, 32-39, 42, 45-46 under 35 U.S.C. 103(a) as being unpatentable over McEwen and Yair (5,965,054), and further in view of Kobayashi et al. (4,740,436), applicants wish to point out that in Col. 7, line 61, through Col. 9, line 57 of Kobayashi et al., alkali metal salts and organic solvents therefor are identified. No mention is made of ionic liquids as is taught by the present invention.

By contrast, the present invention relates to ionic liquids (molten salts with generic structures $NR_4^+X^-$, $PR_4^+X^-$, $SR_4^+X^-$, where NR_4^+, PR_4^+, SR_4^+ are ammonium, phosphonium and sulfonium cations, respectively) that are liquid at temperatures ≤ 150 °C; mixtures containing ionic liquids, or where the mixture contains at least one ionic liquid and one or more ionic solids; and solutions of ionic liquids in molecular (non-ionic) liquids; or combinations thereof, for the generation of electroactivity in conjugated polymers and conjugated oligomers and, more particularly, to the development of stable conjugated polymer electrochemical devices incorporating ionic liquids, such as electrochemical actuators, electrochromic devices, batteries, electrochemical capacitors, light emitting electrochemical cells, fuel cells, sensors, and photoelectrochemical solar cells.

Typically, ionic liquids consist of nitrogen-containing organic cations and inorganic anions. Since they are nonvolatile and nonflammable, have high thermal stability, and are relatively inexpensive to manufacture, ionic liquids have found use in chemical syntheses, particularly catalysis, and in separation technology. Ionic liquids are inherently ionically conductive. They have high conductivity and large electrochemical windows; that is, the electrochemical

potential range over which the electrolyte is not reduced or oxidized at an electrode. These features make ionic liquids good electrolytes. Moreover, their low volatility and nonflammable properties are important for the fabrication of stable electrochemical devices. When compared with other electrolytes, such as the salt solutions in organic liquids of Kobayashi et al., ionic liquids have a significant advantage that they can be obtained in a very dry state which makes them especially suitable for applications in electrochemical systems from which moisture must be excluded over long periods of operation. Moreover, the thermal stability and low volatility of ionic liquids permit the operation of electrochemical devices under high temperature and high vacuum. There are many ways of combining different cations and anions to make ionic liquids. Therefore, high electroactivity for conjugated polymers which results in high performance, conjugated polymer electrochemical devices, can be generated by optimizing the composition of ionic liquids used therewith.

In response to the rejection of claims 19, 20, 23, 24, 43, 44, 47, and 48 under 35 U.S.C. 103(a) as being unpatentable over McEwen and Yair in view of Kobayashi et al., applicants wish to direct the Examiner's attention to lines 9-27 of page 28, of the present Specification, as originally filed, where it is stated that in the preparation of an electrochemical capacitor, gold leaf was applied to one side of each of two electrodes, and an ionic liquid was sandwiched between the two polymer electrodes with the gold leaf on the outside of the capacitor. This is in contrast to Col. 10, lines 49-53, and Col. 11, lines 2-5 of Kobayashi et al., where polyaniline was deposited onto a platinum electrode.

Additionally, McEwen and Yair in Col. 8, lines 27-35, discloses carbon cloth electrodes in contact with an electrolyte sandwiched between stainless steel or conductive polymer current collectors, while Koch et al. in Col. 8, lines 32-40, discloses platinum electrodes. By contrast, the present claimed invention recites conjugated polymer electrodes.

Although McEwen and Yair and Koch, et al. teach ionic liquids electrolytes, applicants respectfully believe that the Examiner has incorrectly

combined the teachings of McEwen and Yair and Koch, et al. with those of Kobayashi et al. That is, there would be no motivation for one of ordinary skill in the art at the time the invention was made to combine the teachings of ionic liquids of either McEwen and Yair or Koch et al. with the teachings of electrolytes comprising ionic solids dissolved in organic liquids of Kobayashi et al. to render obvious the present claimed invention. Additionally, Koch et al. does not teach alkali metal salts.

For these reasons, applicants respectfully believe that the McEwen and Yair and Koch et al. references teach away from Kobayashi et al. reference and cannot properly be combined by the Examiner to render obvious the subject claimed invention under 35 U.S.C. 103(a). The Examiner has therefore failed to make a *prima facie* case for an obviousness-type rejection.

Therefore, applicants believe that claims 1-48, as previously amended, are in condition for allowance or appeal, the former action by the Examiner at an early date being earnestly solicited. Reexamination and reconsideration are respectfully requested.

Respectfully submitted,

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